Actuarial Perspective of the Utah State Retirement Systems

Presented by:
J. Christian Conradi &
Lewis Ward

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Gabriel Roeder Smith & Company
Consultants & Actuaries
www.gabrielroeder.com

Topics

- Role of the Actuary
- Actuarial Funding
- Actuarial Assumptions and Methods
- Contribution Rate Components
- Actuarial Valuations
- Retirement Plan Trends
- Retirement Plan Comparisons
- Trends in Managing Unfunded Liabilities

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Actuarial Mathematics

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The Actuary (aka Gandalf)

- What does the actuary do for the plan?
  - Reviews data, past experience and plan provisions
  - Based on these, selects appropriate assumptions
  - Estimates liability of plan at given point in time
  - Determines employer contribution requirement

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The Actuary

- Monitors several actuarial measurements and ratios; watches trends
  - Funded ratio
  - Looking for need to change assumptions or contributions
- Determines the actuarial effect of proposals
- Provides factors for option and service purchase calculations

Basic Retirement Funding Equation

$$C + I = B + E$$

Where

- C is Contribution Income
- I is Investment Return
- B is Benefits Paid
- E is Expenses

"Money In = Money Out"

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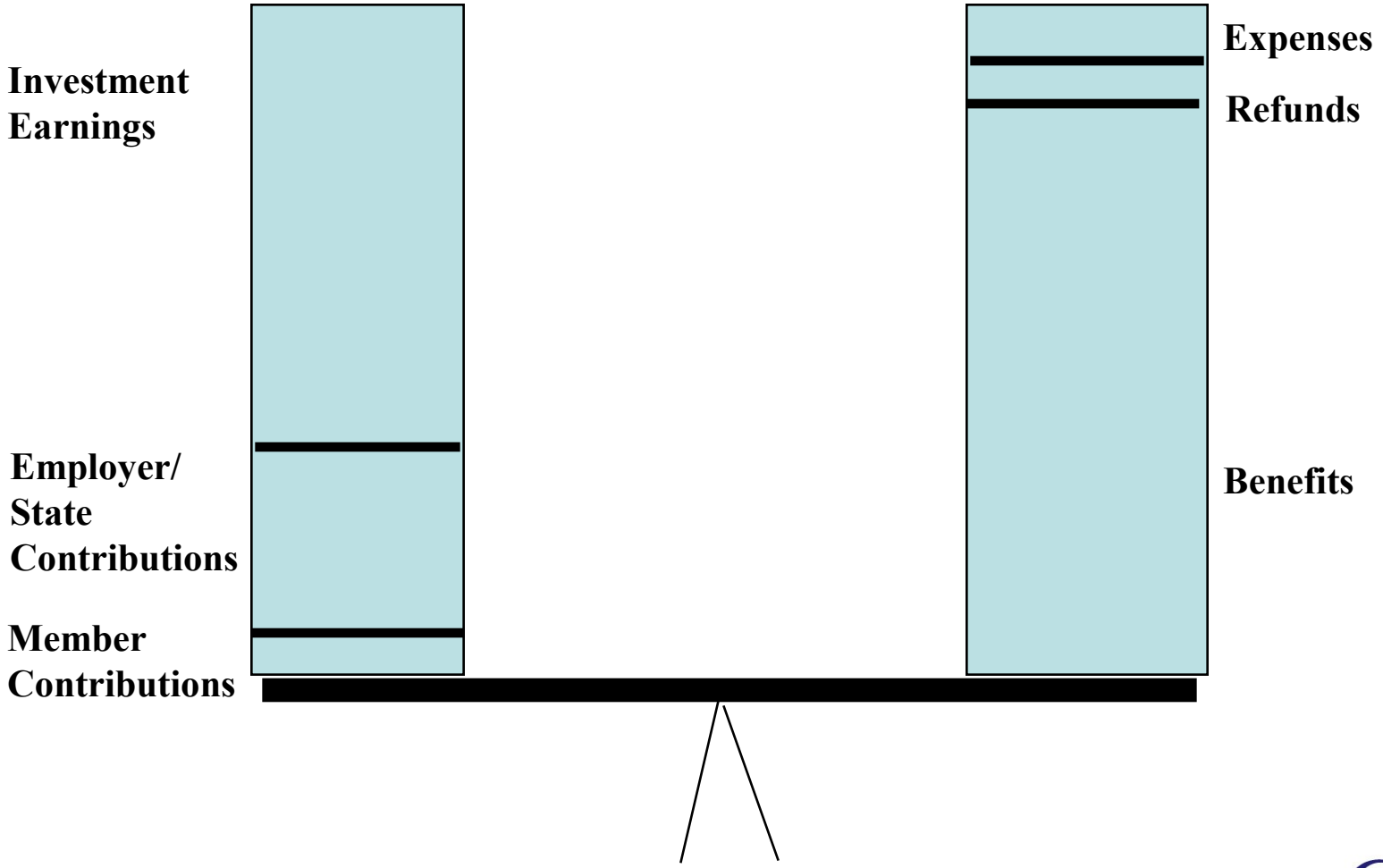
Balance Equation



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Basic Retirement Funding Equation

$$\mathbf{C + I = B + E}$$

B depends on

- Plan Provisions
- Experience

C depends on

- Short Term: Actuarial Assumptions
  Actuarial Cost Method
- Long Term: I, B, E

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Why Prefund?

- Why prefund? I.e., why not just pay the benefits when they are known and due?
  - A few plans do this, but it's not recommended
- In most situations, the payment requirement will start small, when there are only a few retirees, but then can grow exponentially, to a point that the employer may not be able to pay the amounts due

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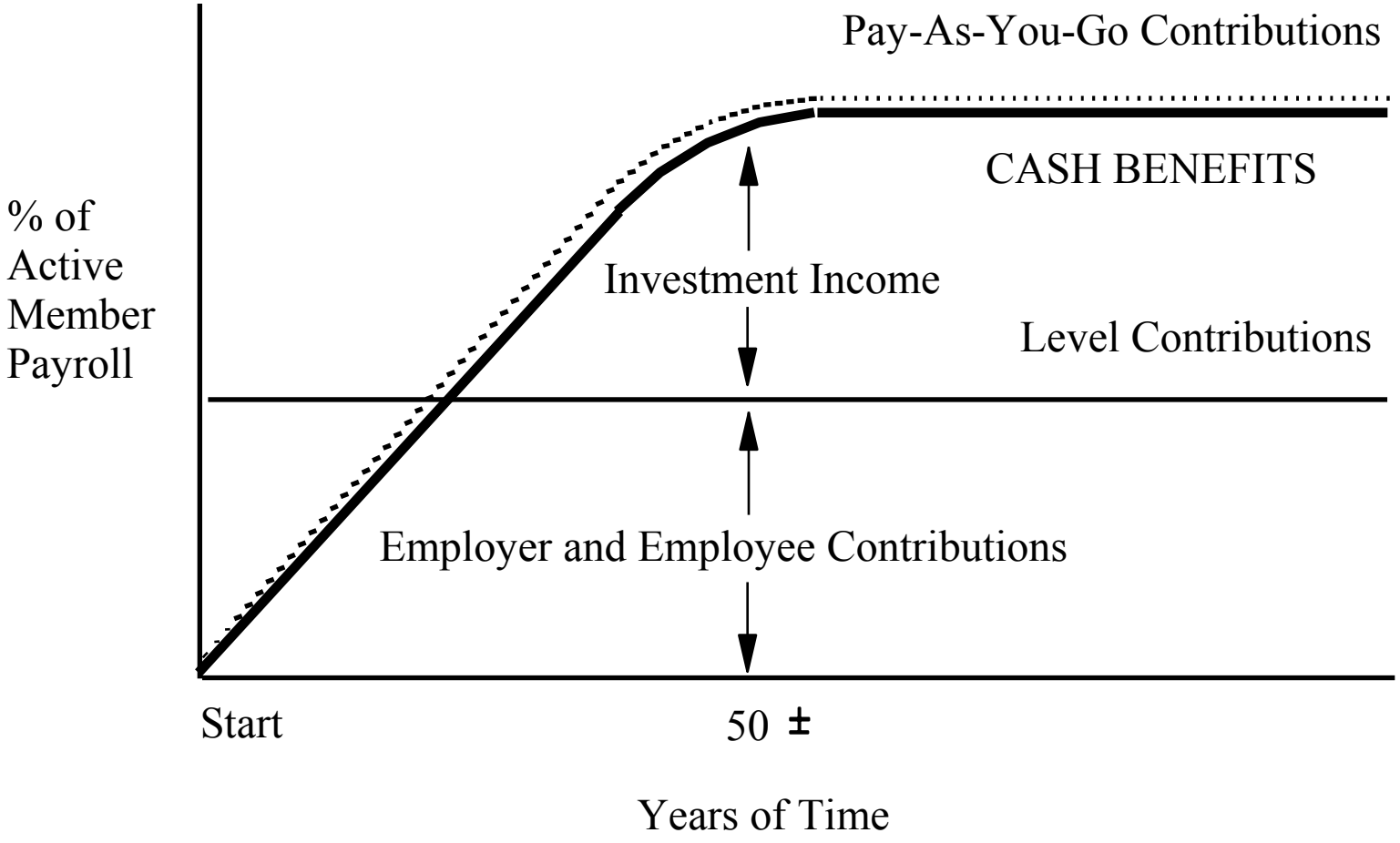
Why Prefund?



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Why Prefund?

- Funding allows a significant part of the plan's cost to be met by investment earnings (The more the fund earns, the less the employer must contribute.)
- Funding in a trust provides security to the members
- Some kind of fund is necessary when there are member contributions
- Bond rating agencies expect money to be set aside for future liabilities

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Time Horizon

- Consider age 65 retiree who elects a joint option
  - Life expectancy is about 18-19 years (less for males, more for females)
  - Joint life expectancy is about 25 years

Time Horizon

- Consider age 25 employee who will retire at age 60 with a spouse age 55
  - 35 years until benefits begin
  - Benefits could be paid for 25-35 years after retirement
  - Last dollar paid from plan may be 60-70 years from now

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Actuarial Present Value

- Actuarial calculations almost always begin with the calculation of a present value.
- Present Value is the amount you need now to make a series of payments in the future
  - Assuming you can earn investment income until making the payment

Actuarial Present Value Example

- Promise to pay you $1,000 tomorrow
  - Need $1,000 tomorrow
- Promise to pay you $1,000 in two years
  - Could invest $907 now at 5% to generate $1,000 in two years

Present Value and Investment Return

- The more you can earn while you have the money, the less you need to start with
  - Higher expected returns mean lower present value
- Actuarial present values also reflect the probability the payments will be made.

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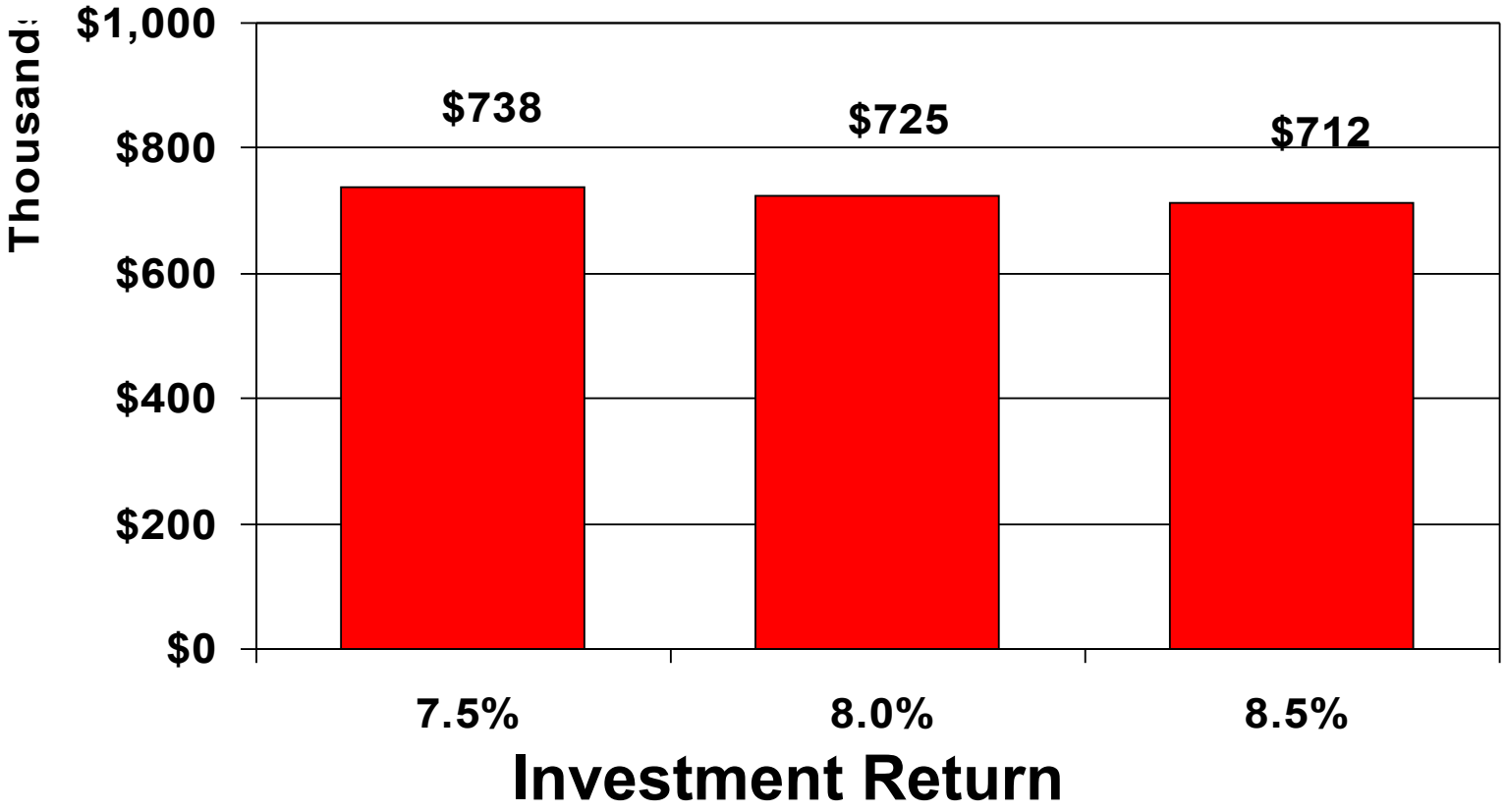
Present Value and Investment Return

Present Value of 10 Annual Payments of $100,000



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The Actuary & Actuarial Present Value

- The actuary must project the future benefits that a member might receive at each age
  - Factoring in future salary increases and service
  - For example, the retirement benefit that would be available at age 55, 56, 57, …
  - The refund available this year, next year, …
  - The death benefit at each age
- The actuary must estimate the probability that each active member will retire, die, become disabled, etc. in each future year

The Actuary & Actuarial Present Value

- Then must determine how the benefit will be paid, and in most cases, the probability that the member is alive at any point in time after retirement
- Then the actuary must discount all of these contingent benefits back to today, reflecting the time value of money
- This is the actuarial present value of future benefits, and in practice requires complex computer modeling software

Actuarial Assumptions

- Assumptions are needed to determine probability and timing of various "life events" in future
  - death in service
  - disability
  - retirement
  - other termination
- Assumptions are needed to determine kind of benefit and payment period in retirement
  - Post-retirement mortality

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Actuarial Assumptions

- Assumptions are needed to determine the amount of the benefit at future dates
  - Salary increase assumption
- An assumption is needed for future investment returns, in order to discount the expected payments back to the present
  - Discount rate or investment return rate

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Actuarial Assumptions

- The actuary studies a plan's experience to assist in setting assumptions
  - For some assumptions, recent past experience is an important guide to the future
    - E.g., post-retirement mortality
  - But for others, recent experience must be weighed against other factors
    - E.g., salary patterns in governmental plans often reflect tax receipts, which in turn follow the general economy

Actuarial Assumptions

- URS experience is sometimes the best guide
  - E.g., for retirement patterns
- But in some cases we look to national statistics
  - E.g., inflation, investment return
- Plan provisions can have an impact on the assumption-setting process
  - Retirement eligibility; size of benefits, etc.
- All this requires the use of judgment

Actuarial Assumptions

- If assumptions are too optimistic
  - Long-term ability to meet the liabilities may be impaired
- For example, if assumed return is 9.5%, but actual return is only 8%
  - True value of liabilities is greater than assumed
    - Since actual return is less
  - More money required than planned on
  - System may have problems paying benefits in future

Actuarial Assumptions

- For example, if you assumed members will retire at 63, but they actually retired at 60
  - Benefit may be less, but it would be payable for more years
  - System has lost 3 years of contributions it was counting on
  - Therefore, the employer contribution rate needed to be higher

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Actuarial Assumptions

- If assumptions are too pessimistic
  - Taxpayer funds tied up unnecessarily in trust fund
- Tension between employees and other uses, such as roads, prisons, parks, education
- Consequences if we're wrong are generally worse if we're too optimistic

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Actuarial Assumptions

- Assumption setting in governmental plans
  - Actuary's role is to study and recommend
  - Trustees accept, reject, or modify recommendations
  - A fiduciary decision

Changes in Major Assumptions

Effect on Liabilities and Contributions

Assumption	Change	Usual Effect
Investment Return	Increase	Decrease
Salary Increases	Increase	Increase
Payroll Growth	Increase	Decrease
Retirement	Younger	Increase
Turnover	More Quits	Decrease
Mortality	Live Longer	Increase

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Actuarial Funding Calculations

- The actuary can determine the actuarial present value of future benefits
  - But then what?
  - Few employers could afford to (or would want to) contribute this much when plan is established
  - But not funding has drawbacks, as noted earlier
  - Therefore, the actuary helps find a "rational" funding pattern
  - This is the function of an actuarial cost method

Actuarial Cost Methods

- Determines the year-to-year incidence of employer/state contributions
- There are different methods, just as there are different accounting methods for handling depreciation or for determining the value of inventory (LIFO vs. FIFO)

Actuarial Cost Methods

- Different actuarial cost methods spread incidence of costs in different ways
  - Based on benefit formula
  - Based on costs ($ or % of pay)
  - One method does not create UAAL
- Key considerations
  - Does the method produce relatively level costs?
  - Does the method allocate contributions to successive generations of taxpayers equitably

Actuarial Cost Methods

- Entry Age Actuarial Cost Method most common for public plans
  - Level costs (% of pay)
  - Fair to different generations of taxpayers
  - Used by URS

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Actuarial Cost Methods

- We use a smoothed asset value in the calculations (AVA = actuarial value of assets)
- Recognize difference between actual return and expected return over five-year period
  - No less than 75% of market
  - No more than 125% of market
- Results using market are too volatile

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Components of Contributions

- Most methods produce two pieces used in determining the employer contribution rate
  - Normal cost
  - Amortization charge for unfunded liability (UAAL)
- Normal cost: The basic cost for the current year
  - May be determined by actual benefits earned
  - Or may be a theoretical level contribution amount
  - Depends on the actuarial cost method
  - In contributory plans, member contributions usually treated as covering part of the normal cost, with the employer covering the rest

Components of Contributions

- Actuarial accrued liability (AAL): The theoretical liability associated with prior years under the method
  - May reflect actual benefits earned or may be a theoretical amount
- Actuarial value of assets (AVA)
  - Could be the plan's market value
  - But usually a smoothed value tied to market
  - Smoothing needed because results are too volatile otherwise
- Unfunded liability (UAAL): The difference between the AAL and the AVA
  - May be positive or negative ("overfunded")
  - The balancing item
  - The liability not accounted for by future member contributions, future employer normal costs, or by the AVA

Components of Contributions

- Second component of annual cost is the amortization of the UAAL
  - Usually an annual payment designed to increase with payroll, although could be a level amount like a traditional home mortgage
  - When System is overfunded, this is a credit
  - Amortization period set by trustees or statutes, unless contribution is fixed

Funding a $10,000 Annual Pension for a Person

Present Value of Benefits

At Retirement Date $90,000

At Valuation Date $25,000

Allocated to Past and Future Service

$17,000
Actuarial Accrued Liability

$8,000
Present Value of
Future Normal Costs

Actuarial Accrued Liabilities
\- Actuarial Assets
Unfunded Actuarial Accrued Liabilities

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Using the Home Mortgage Analogy

Retirement System	Home Mortgage
Unfunded liability	Outstanding loan balance
Normal cost	Taxes and insurance payment
Amortization charge to fund the unfunded liability	Principal and interest portion of loan payment
Change in contribution rate due to assumption changes	Refinancing an existing mortgage
Experience loss creates increase in unfunded liability and therefore in contribution rate	Take out a second mortgage to pay for a new roof
Benefit change increases normal cost, unfunded liability, and contribution rate	Addition to home increases taxes and insurance, second mortgage increases principal and interest payments

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Components of Contributions

- Normal cost
  - Net of member contribution, if applicable
- Amortization of UAAL
- Additional components for certain funds
  - 3% substantial substitute cost
  - Offsets based on dedicated funding sources
    - Firefighters (premium taxes)
    - Public Safety ("excess" premium taxes)
    - Judges (court fees)

Section 49-11-301(5) of the Utah Code

- URS Board of Trustees permitted to leave contribution rates unchanged from prior year, if
  - Funded ratio is less than 110%
  - Calculated rate would otherwise decrease
- Designed to prevent a recurrence of what happened in the late 1990s, when bull market gains drove contribution rate decreases, only to see these reversed by 2000-2002 bear market

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Components of Employer Contribution Rate

- Example: Fund 16, Noncontributory State & School
  - 11.72% Normal cost
  - 03.60% Amortization charge
  - 00.60% 3% substantial Substitute
  - 15.92% Total actuarial rate
  - 16.17% Board set rate (§49-11-301(5))

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Unfunded Actuarial Accrued Liability

- What it is **not**
  - Accounting liability
    - UAAL is always off the employer's balance sheet
  - Liability if plan is terminated
  - Liability if plan is frozen
  - Term "liability" is misleading
    - Remember, different cost methods produce different UAALs

Unfunded Actuarial Accrued Liability

- What it is
  - "Liability" associated with prior years
  - Assumes plan continues
  - Reflects expected future pay increases and, in some methods, expected future service

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Unfunded Actuarial Accrued Liability

- Sources of unfunded liability
  - Actual experience differs from assumed
  - Granting benefit credit for service before system created
  - Granting retroactive credit for benefit enhancements

Unfunded Actuarial Accrued Liability

- Nothing wrong or bad about having an unfunded liability
  - If systematic progress being made in amortizing it over a reasonable time period
- Nothing wrong with a benefit enhancement that increases unfunded liability
  - If it is funded properly

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Actuarial Valuations – Why Have Them?

- To provide an annual snapshot of the System
  - Membership
  - Assets & liabilities
- To determine the required employer contribution rate, if not set by statute

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Actuarial Valuations – Why Have Them?

- To monitor experience
- To monitor various funding measures
- To calculate gains and losses for year
  - Investment
  - Liability
  - Benefit changes
  - Assumption changes

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Key Measurements

- Employer contribution rate, unless set by statute
- Funding period, if set by statute
  - Number of years theoretically required to reduce UAAL to zero
- Normal cost and unfunded actuarial accrued liability
- Funded ratio (AVA/AAL)
  - Over 100% = "overfunded"

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Key Measurements

- UAAL as percentage of payroll
- Gains and losses
  - Differences between assumptions and actual experience
- External cash flow as percentage of assets
  - Member and employer contributions, less benefits, refunds, administrative expenses

Development of Funded Ratio

URS Totals (Jan. 1, 2009)		
(1) Actuarial Accrued Liability	$	22,932.4
(2) Valuation Assets		19,853.7
(3) Unfunded Liability (1)-(2)	$	3,078.7
(4) Funded Ratio (2)/(1)		86.6%

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Development of Funded Ratio

- Funded ratios range from 99% (Firefighters Division B, Legislative)
- To below 80% (several Noncontributory Public Safety Funds and 3% Substantial Substitute Fund)
- Lower funded ratios are at P/S funds that came into URS more poorly funded
- Funding ratios would be lower using market value (69.3% in total)

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Which Plan would you want to retire from?

	Funding Ratio	
	Plan 1	**Plan 2**
1995	30%	90%
1996	33%	87%
1997	36%	84%
1998	39%	81%
1999	42%	78%
2000	45%	75%
2001	48%	72%
2002	51%	69%
2003	54%	66%
2004	57%	63%
2005	60%	60%

Case Study: Impact of Actuarial Gains and Losses

- A plan that is 100% funded has a 10% decrease in its assets, so the contribution rate has to go up 10% right?

Wrong!!

Contribution Expressed as %'s of Active Payroll

	Before Change	After Change
Total Normal Cost	12%	12%
Accrued Liabilities	$100 Million	$100 Million
Assets	$90 Million	$80 Million
Unfunded Liability	$10 Million	$20 Million
% to Amortize	4%	8%
Total Contribution	16%	20%
% Increase		25.0%

In this example, a 10% loss on assets led to a 25% increase in contribution rate.

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Trends and Comparisons

- Trends in coverage
- Comparisons of public sector retirement benefits
  - Generally taken from 2006 Wisconsin Survey or 2007 Public Funds Survey

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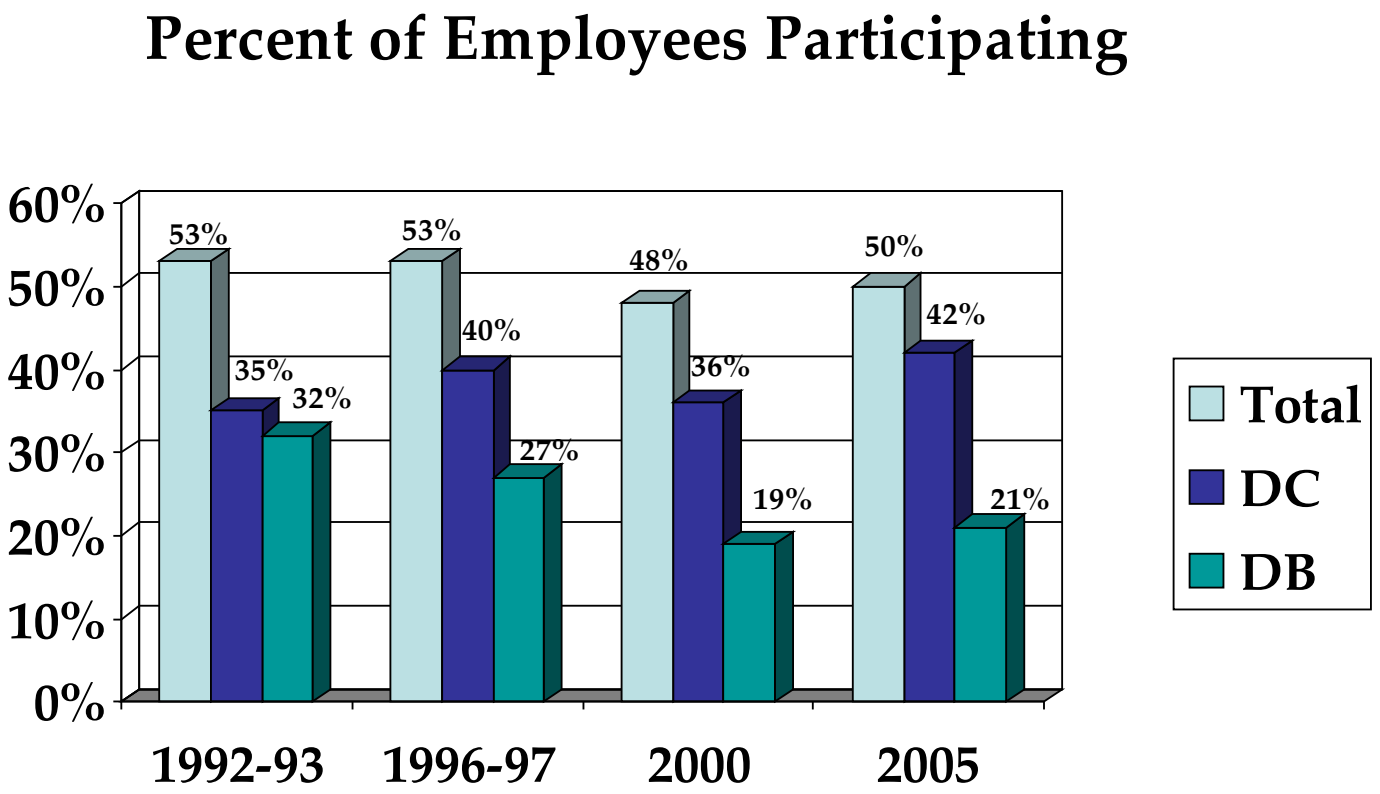
Trend in Private-Sector Coverage



Source: "Trends in Retirement Plan Coverage Over the Last Decade," by Stephanie L. Costo, *Monthly Labor Review*, Feb. 2006

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Trends in Private-Sector Coverage

- Only about half the private sector workforce is covered by employer-provided retirement plans, DB or DC
  - Total not equal to sum of DB and DC pcts., because some employees are covered by both plans
  - In last 12 years, only small reduction in total coverage
- However:
  - Many of the employers without coverage are small
  - Many of the employees with no coverage are in the service and retail industries
  - Many of the employees without coverage are part-timers

Trends in Private-Sector Coverage

- DB disappearing in private sector
  - They have been since the 1970s
- Numbers are worse than they seem
  - Many employees covered by flat-dollar plans, not tied to pay
  - Many employees participating in frozen DB plans
  - Many employees now in hybrid plans (23% in 2003)
- PPA 2006 expected to lead to more plan freezes and terminations in private sector
  - Because of new funding rules
- In 2005, about 60% had access to coverage
  - Difference between 50% and 60% due to employees choosing not to participate in 401(k) plans

Trends in Private-Sector Coverage

- Why has it happened? Lots of reasons:
  - Cost reduction and globalization
  - Lower marginal tax rates
  - Focus on recruiting at expense of retention
  - Increased mobility of workforce
  - Increasing complexity and added liability due to legislation from ERISA (1974) to today (PPA 2006)

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Trends in Private-Sector Coverage

- Why should you care?
  - Taxpayer revolt. "Why should those $#%%@! government employees have benefits way better than mine?"
    - But do these plans really lead to higher taxes?
    - Or do they lead to reduced salaries for active members?
  - "If it's good for business, it must be good for government."
    - But public sector workers are different

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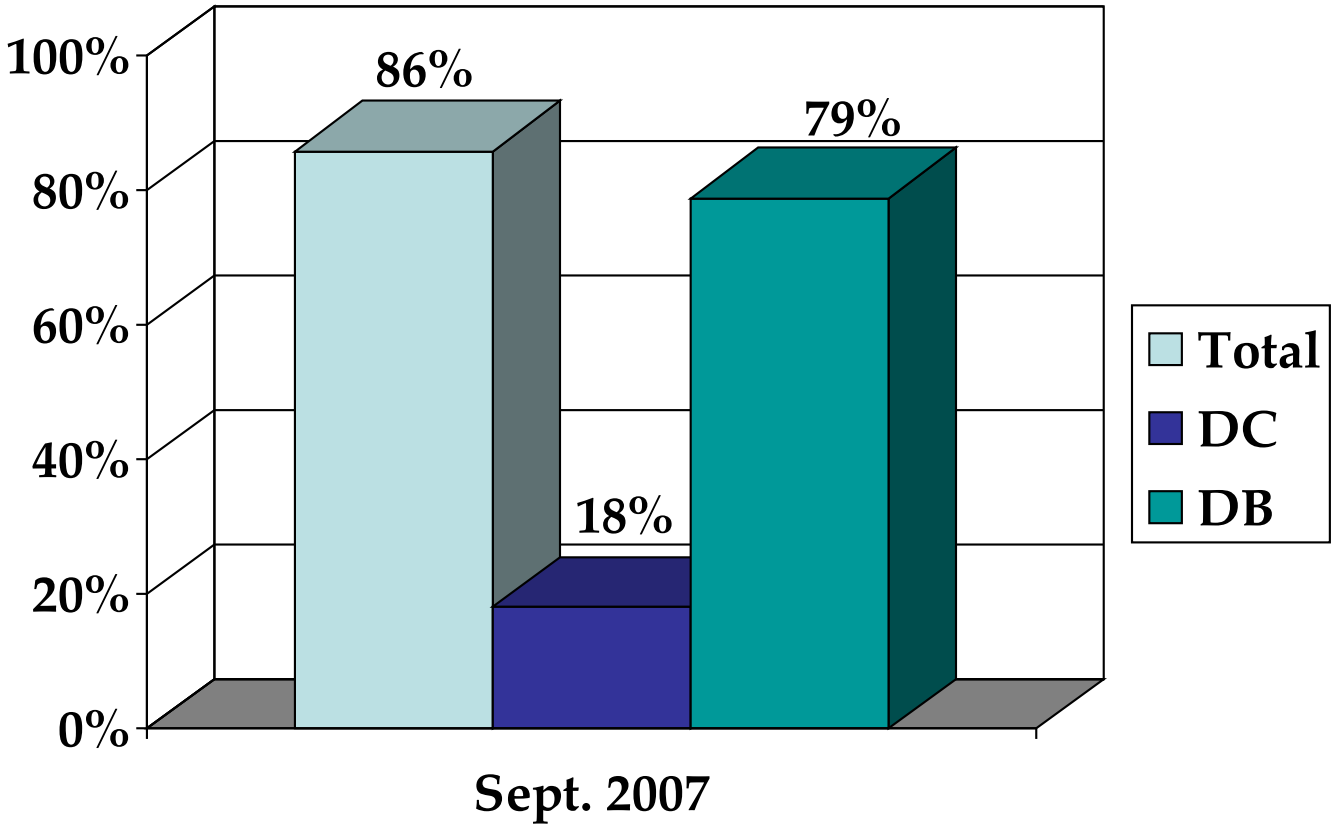
Public-Sector Coverage



Source: *National Compensation Survey: Employee Benefits in State and Local Governments in the United States, September 2007,* Bureau of Labor Statistics, March 2008

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Public-Sector Coverage

- Statistics include both state and local government coverage
- Coverage percentages include part-time employees.
  - Among full-time employees, coverage is 95% (Total), 21% (DC), and 88% (DB)
  - Little change in DB coverage since 1990 (90%), but expanded use of DC plans in public-sector (9%)
- DC usually secondary, except for state colleges and universities, and a few states with mandatory or optional DC plans

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Public-Sector Coverage – DC Cases

- Mandatory for New Hires
  - Michigan (state employees, 4/1/1997)
  - Alaska (all public employees; 7-1-2006)
- Optional
  - Florida
  - South Carolina
  - Ohio (3 choices)
  - Colorado, Montana, 2-3 others
  - Locals

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Public-Sector Coverage – DC Cases

- New hire election rates when optional*
  - Florida: 21% (FY 2006)
  - SC: 13% (excl. Higher Ed, FY 2006)
  - MT: 10% (FY 2006)
  - CO: 12% (1-3-2006 through 9-13-2006)
- Others
  - Nebraska (cash balance plans)
  - West Virginia (DB→DC→DB)

*Source: "Defined Contribution Experience in the Public Sector," by Mark Olleman, *Benefits & Compensation Digest*, February 2007

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Benefit Multipliers

- The average benefit multiplier for large public sector plans:
  - 1.85% for employees in Social Security
  - 2.20% for employees not in Soc. Sec.
  - 2.00% for URS
- Employees not covered by Soc. Sec. generally have higher multipliers, to make up for the lack of a Soc. Sec. benefit
  - But their member contributions tend to be higher too

Benefit Multipliers

- These averages are for general state/local government employees and teachers
- Hazardous duty employees generally have higher multipliers, earlier retirement or both
  - And they usually have higher member contributions too.
- URS public safety/fire multiplier is 2.50% for first 20 years, then 2.00% for next ten years.

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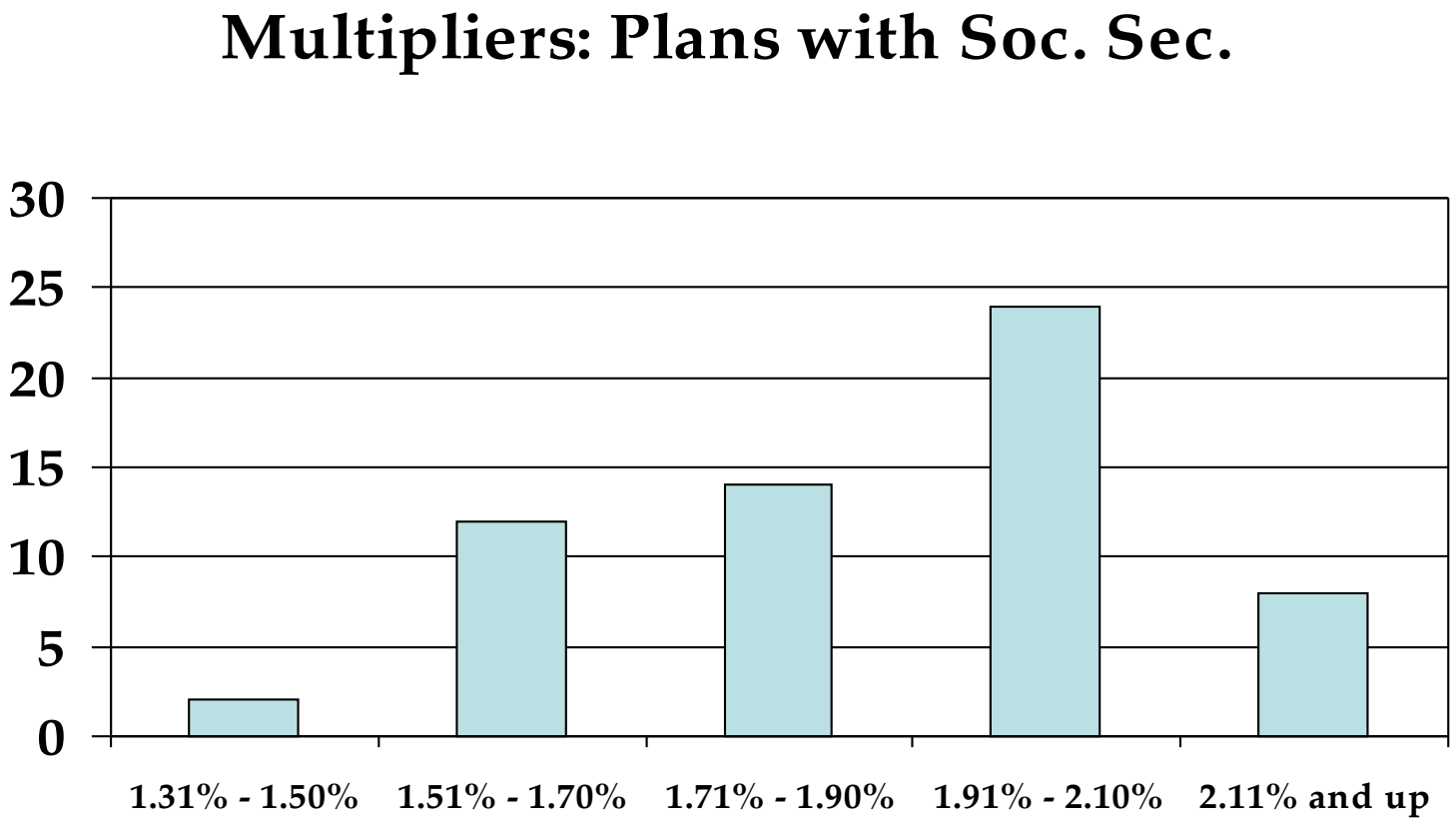
Benefit Multipliers



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Final Average Salary Period

- Of statewide public sector plans:
  - Two-thirds have final average earnings based on 3 years or less
  - Most of rest use a five-year averaging period
- For URS
  - 3 year final average period for most groups
  - 5 years for Big System contributory
  - 2 years for Judges

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Retirement Eligibility

- Retirement Eligibility has a significant impact on the liabilities
  - The longer a member's career is extended:
    - The longer the fund has to accumulate assets to pay the benefits
    - The shorter the time period the fund has to pay benefits
- URS: 30 years (or age 65 with 4 years)
  - 20 years for hazardous duty (or 60 with 10 years)

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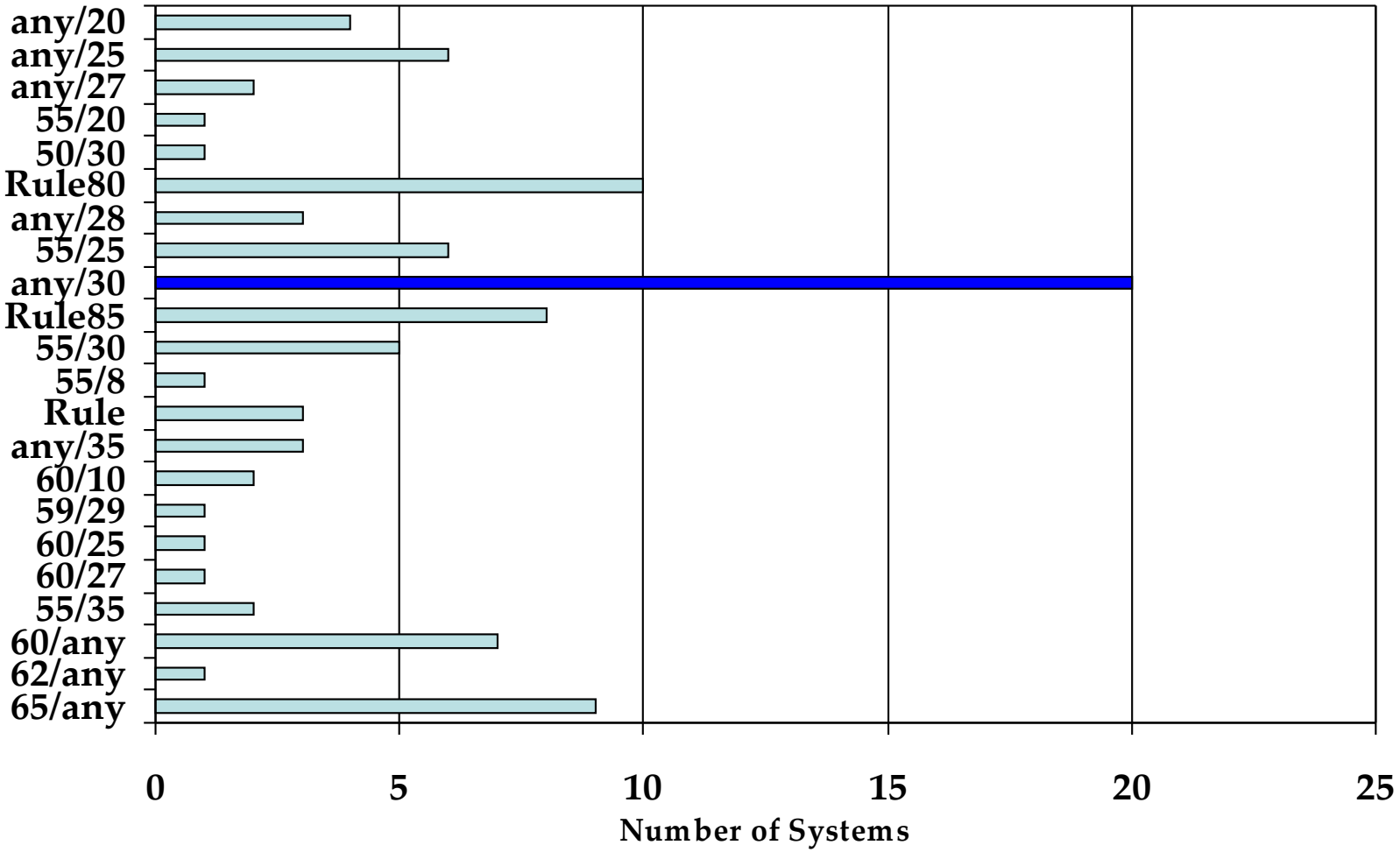
Unreduced Retirement Eligibilities (Nonhazardous Duty)



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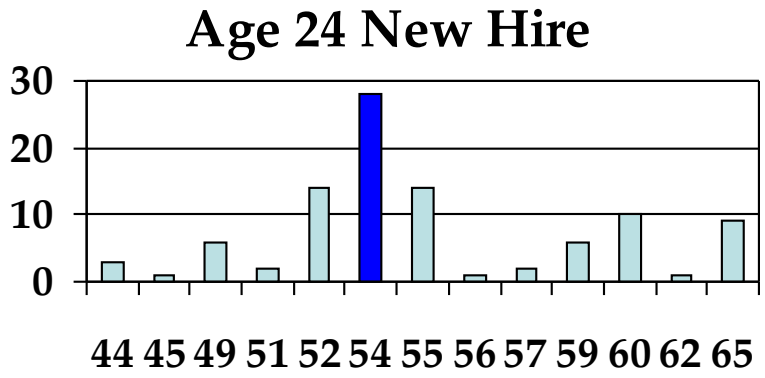
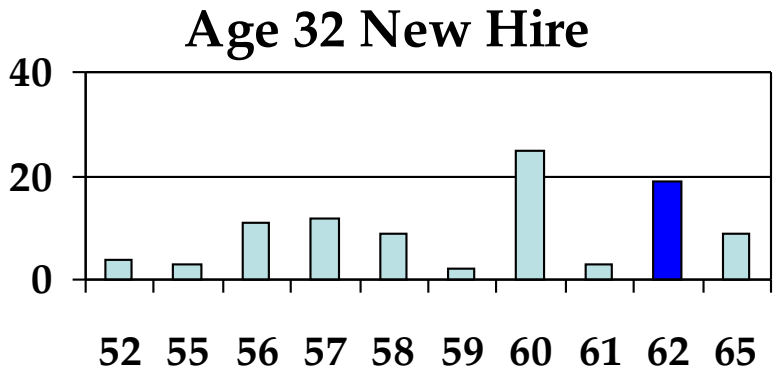
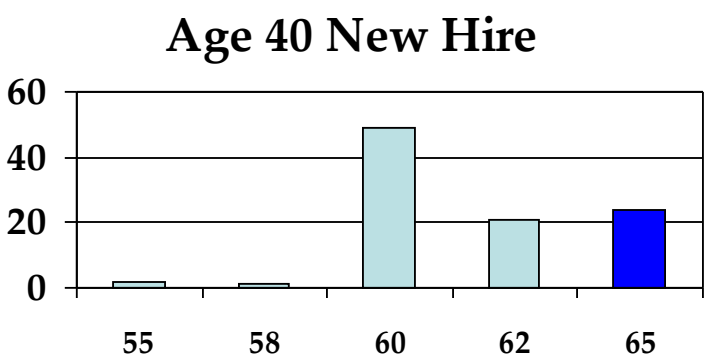
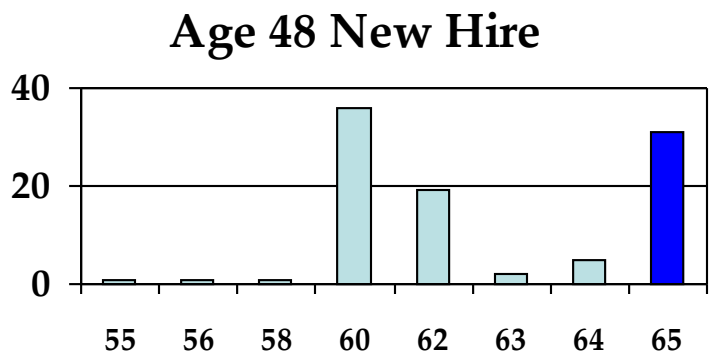
Earliest Unreduced Retirement Age (Nonhazardous members)









Represents URS

All retirement ages assume no service purchases

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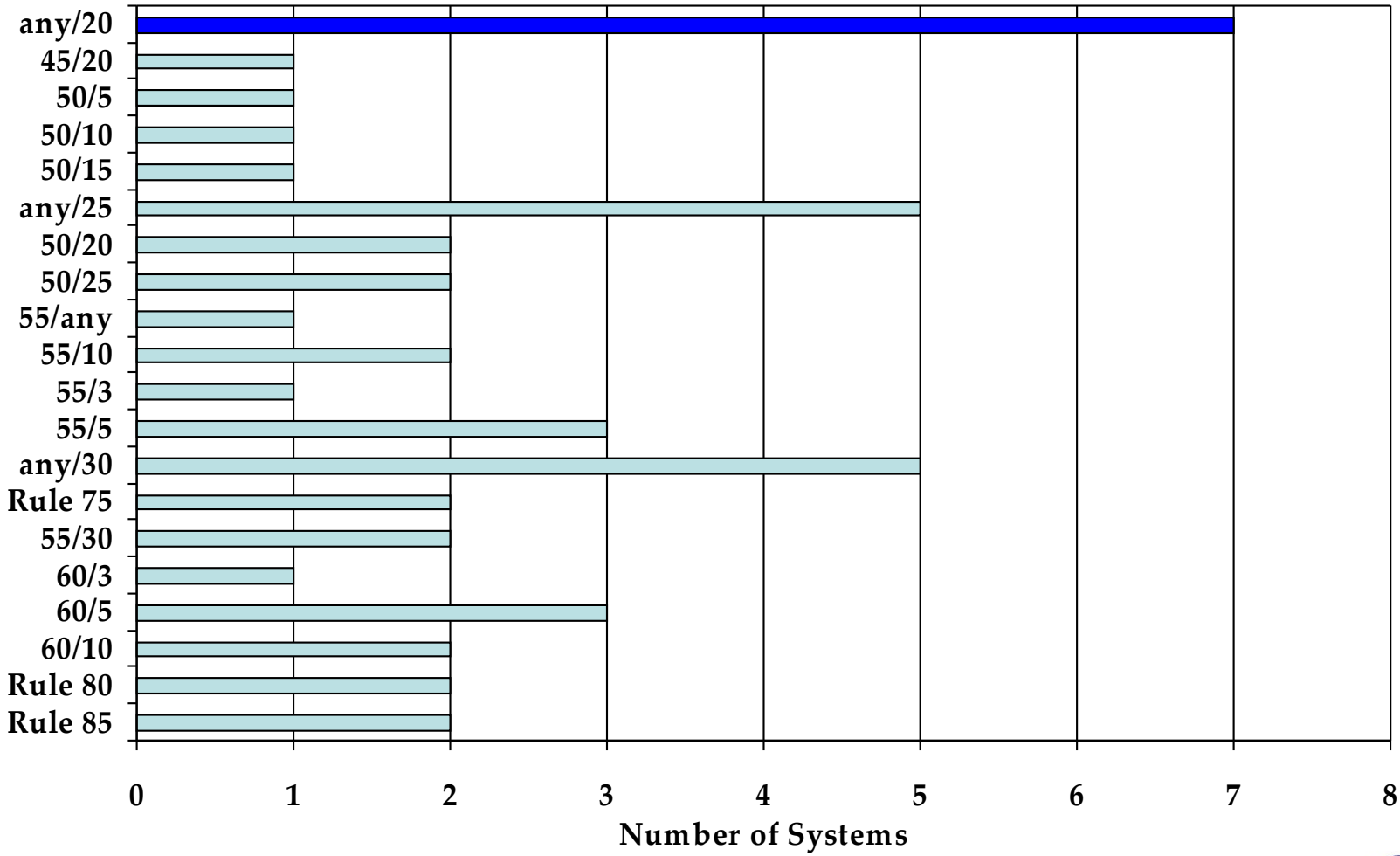
Unreduced Retirement Eligibilities (Hazardous Duty)



- KERS and CERS members have any/20 and 55/any

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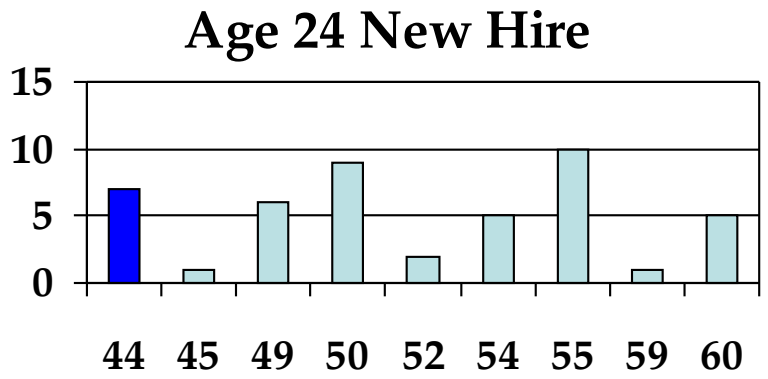
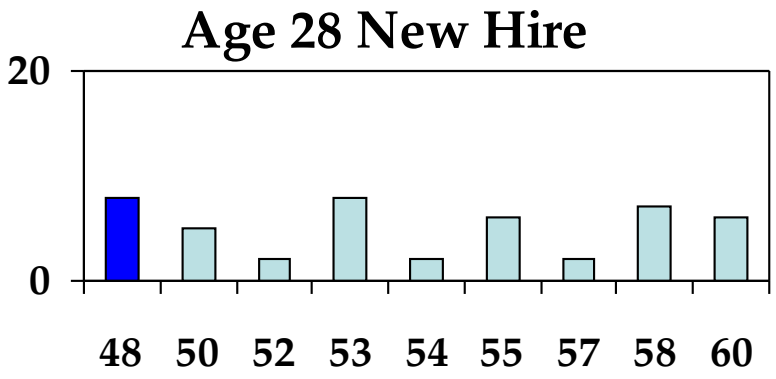
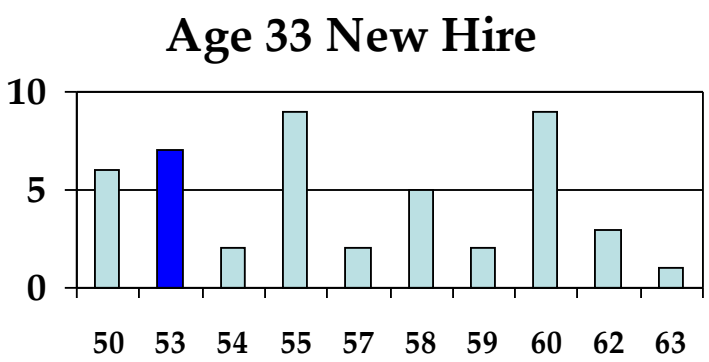
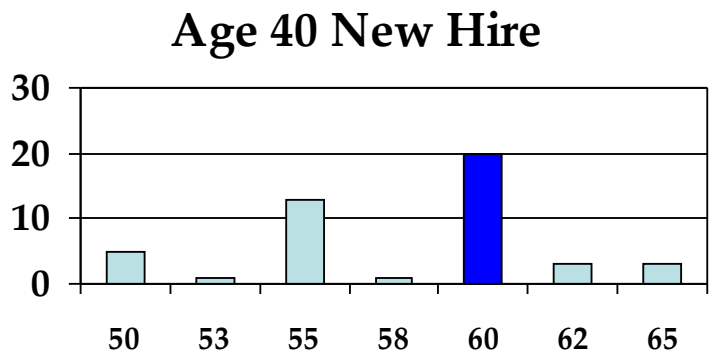
Earliest Unreduced Retirement Age (Hazardous Duty members)









Represents URS

All retirement ages assume no service purchases

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Vesting Requirements

- 60% of the statewide plans require five years of service or less for full vesting
- Ten year vesting is still common (20%), but the number of such plans is shrinking
- Not very important for contributory plans, because refund is often more valuable than the deferred benefit
- URS requires four years
  - Six years for judges

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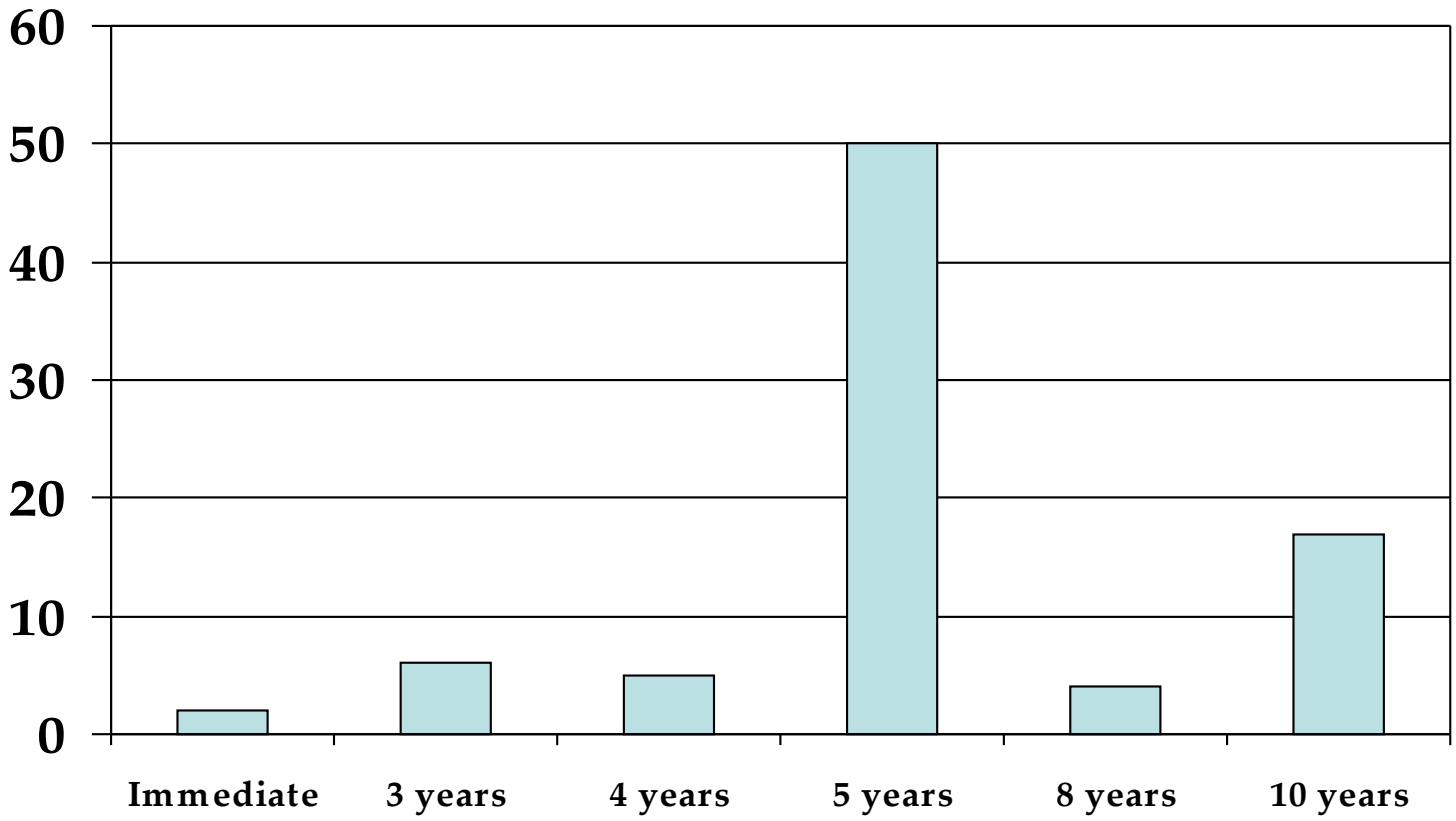
Vesting Requirements



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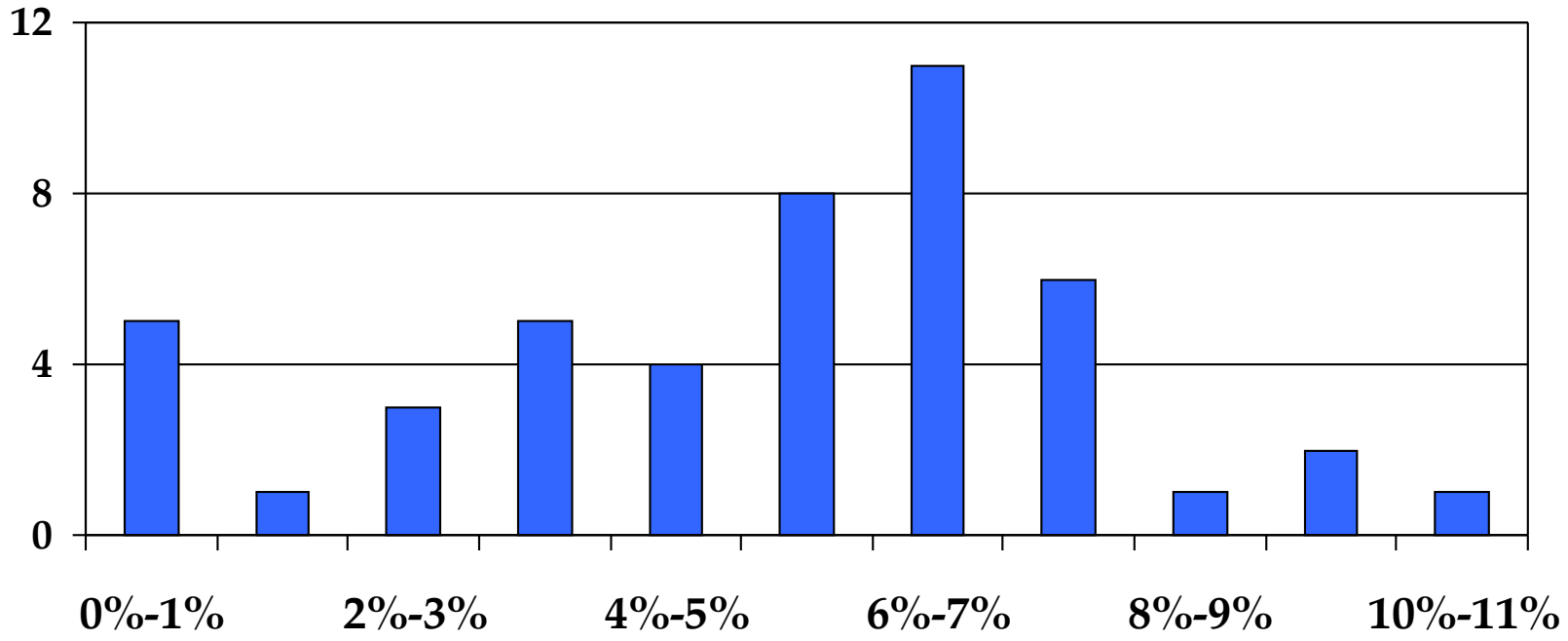
Member Contributions

- Most public pension plans are "contributory", meaning employees share in the funding of the plan
- If a member leaves service before retirement, they can take the accumulated balance of their contributions as a refund and forfeit any further benefits
  - May have interest credited to the account

Member Contributions: General Employees



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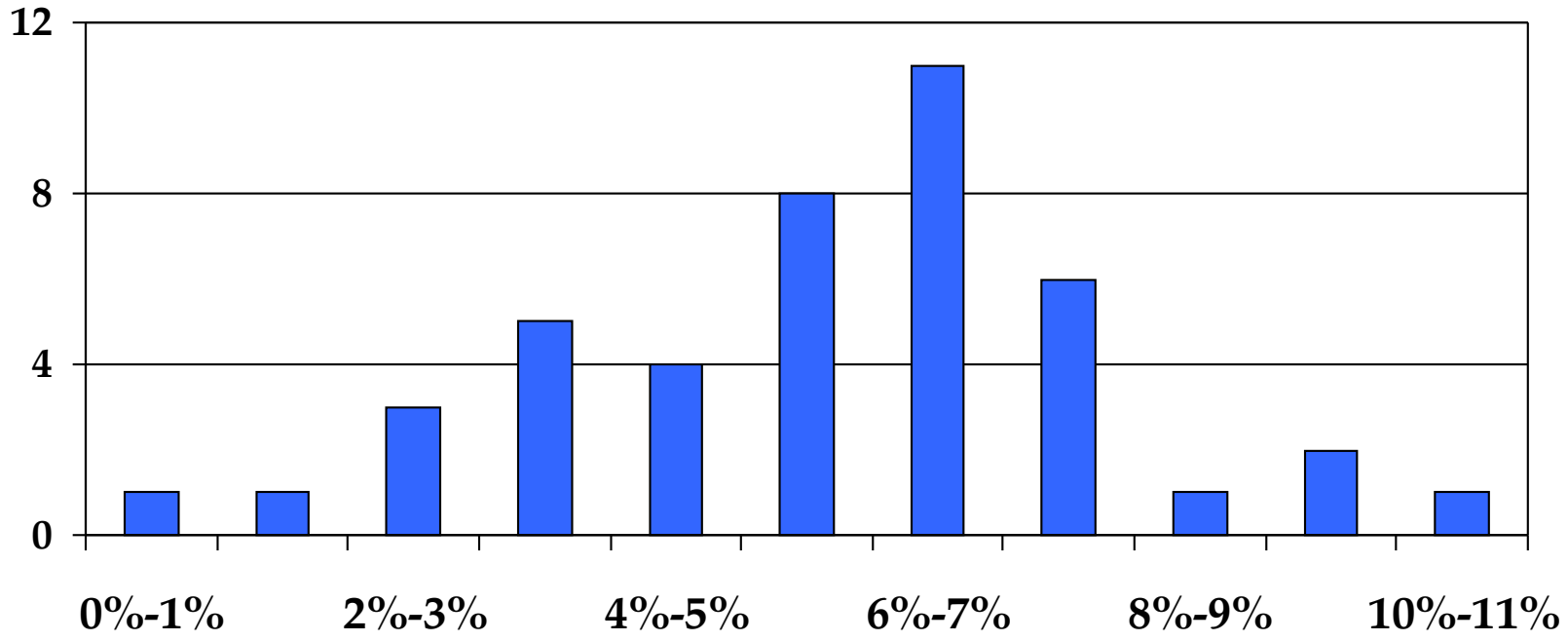
Member Contributions: Teachers



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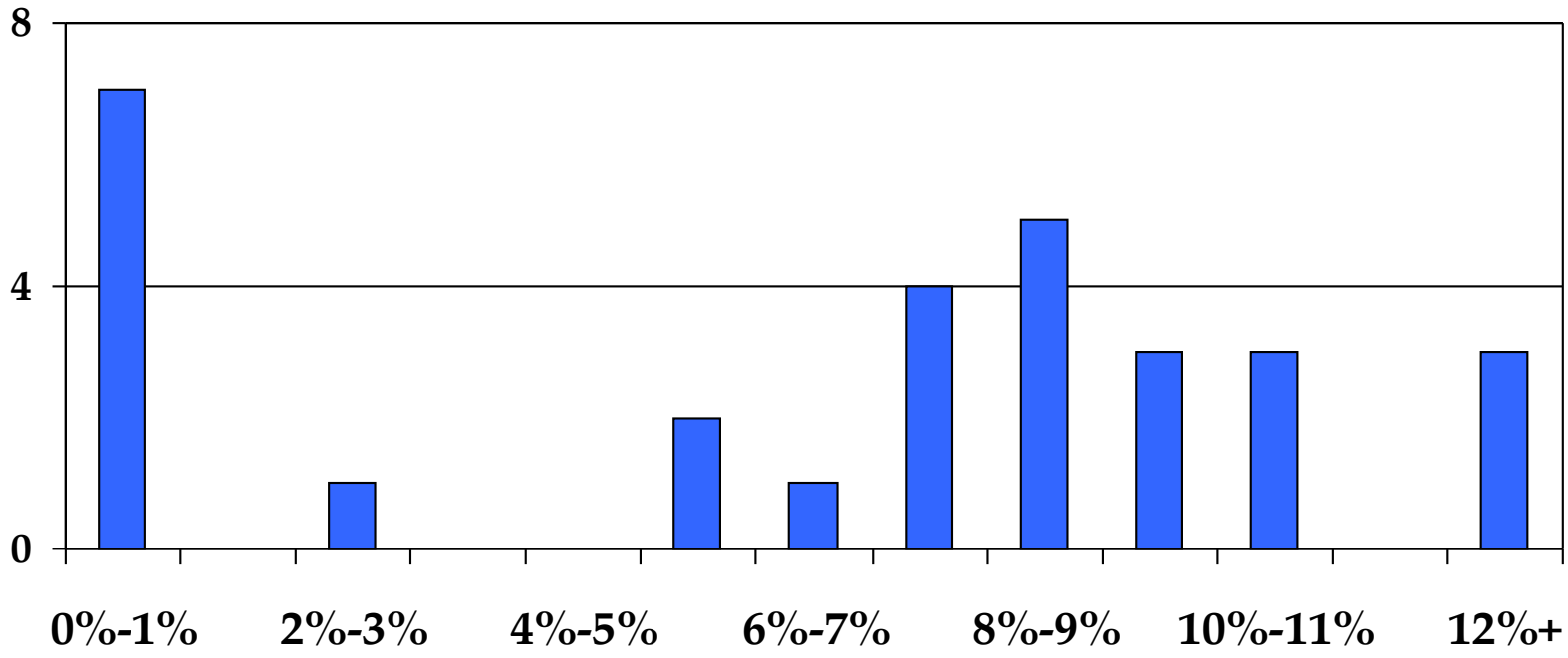
Member Contributions: Hazardous Duty Employees



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COLA Provisions

- Provision of cost-of-living adjustments to retirees is common among public retirement systems
- About three-fourths of the plans provide an automatic cost-of-living adjustments
  - Others may provide increases on an ad hoc basis

COLA Provisions

- URS COLA
  - 100% of inflation
  - Simple increase
  - Maximum 4.00%
  - With catch-up
- Compounded increases for Judges
- 2.50% maximum for non-State Public Safety
  - Optional 4.00%

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COLA Provisions

- Post-retirement cost of living increases (COLA) weigh heavily on a pension plan
  - Value of non-increasing $1 monthly annuity for a 60 year old: $120.60
  - Value of a $1 monthly annuity increasing at 3% compounded annually for a 60 year old: $149.21
  - 24% increase in the value at retirement
- Therefore, COLAs are expensive

COLA Provisions

- 30 provide COLAs only on an ad hoc basis
- 37 tied to CPI
  - Many different formulas
  - Simple or compound
  - 31 have a cap or limiting factor of some kind
- 10 are tied to investment performance
- 15 are a fixed 3%, simple or compound
  - 7 are some other fixed amount (1.5% - 3.5%)

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Funding Ratios

- Average funded ratio for large public retirement systems = 85.3%
  - URS = 83.1% as of Jan. 1, 2009
  - URS = 95.1% as of Jan. 1, 2008
  - URS = 95.8% as of Jan. 1, 2007
  - Based on actuarial value of assets
  - Source: Public Plan Survey (current)
  - Survey generally based on 2007 and 2008 actuarial valuations, almost all done before meltdown
- 2009 valuations will show very different results

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Funding Ratios

- Average market funded ratio for large public retirement systems = 84%
  - Based on market value of assets
  - URS = 69.1% as of Jan. 1, 2009
  - URS = 98.3% as of Jan. 1, 2008
  - URS = 105.0% as of Jan. 1, 2007
  - Source: Estimate from 2009 Wilshire Report on State Retirement Systems: Funding Levels and Asset Allocation
  - Estimate based on sample of 2008 actuarial valuations, most still not reflecting meltdown
- Once again, 2009 valuations will show very different results

Contribution Rates

- URS's 16.17% employer contribution rate (Fund 16, State & School) among the highest. Most of those higher are not covered by Social Security
  - Median for those in Soc. Sec. = 8.5%
- But most other plans receive member contributions. Median total contribution for groups covered by Social Security is ~13.5% (8.5% employer + 5.0% member)
  - URS rate reflects increase from 2009 valuation, while survey information is not that recent
- Source: 2007 PPCC Survey

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The Situation Today

- Fair market value decreased from $21.0 billion to $15.9 billion
  - Values exclude 401(k) and 457 plans
- Assets returned -23.4% on market, net of expenses, in 2008
  - Compared to 7.75% assumption
  - Single worst return in at least last 20 years, probably much longer
  - Ten-year average market return (net of expenses) of 4.2%
  - In theory, a result this bad happens about once a century

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The Situation Today

- -23.4% market return for 2008 vs. expected return of 7.75%
  - Implies -31.15% shortfall
- Expected market value at 12/31/2008 was $22.4 billion (assuming 7.75% return) vs. actual market value of $15.9 billion
  - $6.5 billion shortfall!
- Only 20% of this loss has been recognized at Jan. 1, 2009, due to actuarial asset valuation method (five-year smoothing)

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The Situation Today

- Higher contributions on the horizon
  - Assuming no recovery
  - Assuming no other changes to benefits or assumptions or methods

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Reactions to Meltdown

- Meltdown → Recession
- Recession → Decreases state tax revenues
- + Higher contribution rates for retirement plan
- = Problems for everyone

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Reactions to Meltdown

- Employer contribution increases?
- Where will money come from?
  - Smaller future active member salary increases
  - Other benefit reductions?
  - Tax increases?
    - Even very blue, strong labor states are not suggesting this
  - Shifts from other needs
    - Reduced services

What Else Can Be Done?

- Benefit cuts? Depends on legal environment
- Can benefits be reduced or changed for:
  - Retired members?
  - Members eligible for retirement?
  - Vested members not eligible to retire?
  - Nonvested active members?
  - Only future hires?

What Can Be Done?

- Can member contributions be implemented or increased?
- No "national" answer
  - Dependent on state law and court decisions
  - Some states have constitutional protections
  - Others look to contract clause
  - Often it is unclear how the courts would rule
  - A legal question, not an actuarial question

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What Are Other Funds Doing?

- Most are doing (or are talking about doing) some or all of these:
  - Forming task forces or pension commissions
    - Sometimes covering several systems
    - DC alternatives may get discussed/proposed
  - Increasing employer contributions
    - Especially in plans that don't have a statutory contribution rate
    - Most legislatures haven't changed statutory rates yet

What Are Other Funds Doing?

- Looking for other revenue sources
- Cutting the workforce
  - Furloughs, layoffs, outsourcing
  - Driven more by recession than pension costs
  - Affects state employees more than teachers
- Reducing benefits
  - Lowering multipliers
  - Making Final Average Salary periods longer
  - Going after abuses (especially spiking)

What Are Other Funds Doing?

- Increasing retirement ages
  - Higher ages
  - Longer service
  - Not letting purchased service count for eligibility
- Creating new tiers with lower benefits
  - Where cutting benefits for current members is not permitted
- Few are talking about significant asset allocation changes

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Conclusion

"How shall I torture you today?
Put you on the rack? Boil you in oil?
Make you listen to an actuary for an hour?

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Questions?

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